UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,153	01/18/2002	Yasunari Ikeda	450118-02396	9213

20999 7590 08/30/2005

FROMMER LAWRENCE & HAUG
745 FIFTH AVENUE- 10TH FL.
NEW YORK, NY 10151

EXAMINER	
CHANG, EDITH M	
ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,153	IKEDA ET AL.	
	Examiner	Art Unit	
	Edith M. Chang	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☒ Claim(s) *17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments/Remarks

1. Applicant's arguments with respect to claims 1-15 and 17 have been considered but are moot in view of the new ground(s) of rejection.

Drawings

2. The drawings were received on April 21, 2005. These drawings are accepted.

Claim Objections

3. Claims 6 and 9 are objected to because of the following informalities:

Claim 6, lines 3 & 5: "an initial" should be "the initial".

Claim 9, line 4: "an initial" should be "the initial".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9, line 8: "demodulated sub signals" does not clearly indicate which or what kind signals they are. In the independent claim 7, there are demultiplexed main signal and sub signals, deinterleaved demultiplexed main signal, and decoded deinterleaved main signal recited.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-4, 6-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Klank et al. (US 6,330,293 B1).

To **claims 1, 7 & 9**, Park teaches an OFDM receiver for digital broadcasting system in the FIG. 1 and column 1 lines 33-34.

In FIG.1, the receiver comprises the pilot signal decoding section 700 demulitplexing the transmitted data (the main signal) and SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-55) of the OFDM signal received from tuner through A/D (500), and rotator (510) (column 3 lines 57-63),

The FFT processor 710 with the rearrangement memory 720 initialized/supplied by table rearranging section accordingly to (730 of FIG.3) reproduce the sub signals (column 3 lines 59-63);

The controller (570) for controlling reproduction of the transmitted data (the main signal); and

The decoder (FEC DECODER of FIG. 1) to decode the interleaved signal from the FPGA#2 the equalizing and interleaving section 600 (column 3, lines 49-55).

The equalizing and interleaving section 600 deinterleaving the demultiplexed data from the section 700 using the parameter (REF, SPC of FIG.13), the FIG.13 is the detail input/output low of the equalizing and deinterleaving section 600.

However, Park does not explicitly specify the pseudo-random binary sequence (PRBS) in the pilot signal decoding section of the OFDM system. Klank et al. teaches the pilot signals are derived from a pseudo-random binary sequence (PRBS) W_k for each of the transmitted carriers k (column 1 lines 50-53 '293). The sequence W_k may also define the start phase of the TPS carrier information (column 1, lines 53-56 '293). As Park having the pilot detecting section with the table rearranging section and rearrangement memory to reproduce the data and sub signals (FIG.1 '030), at the time of the invention, it would have been obvious to one of ordinary skill in the art to have the PRBS taught by Klank in Park's pilot signal decoding section to provide the reference signals/data to the table arrangement section for decoding the pilots in order to provide an accurate, efficient, and robust system of synchronization suitable for wireless reception (column 1, lines 55-60).

To **claims 2** & **10**, Park teaches the OFDM broadcast signal (column 1 lines 33-34) with transmitted data (the main signal) and SPC (scattered pilot cells), CPC

(continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-45).

To **claims 3 & 11**, since the DVB (column 1 lines 33-35) and DAB (digital audio broadcasting) both standards choose OFDM scheme, hence Park's receiver receiving the sound data in the transmitted OFDM signals.

To **claims 4 & 12** Park teaches the SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) pilot signals contained in the sub signals in the frames (column 1 lines 40-45) of the OFDM signal received from tuner through A/D (500), and rotator (510) (column 3 lines 57-63) and

In FIG. 13, the equalizer (640) of the equalizing and deinterleaving section (600) for correcting the distortion/interference in the data according to the pilot signal (SPC).

To **claim 6**, In FIG. 1, Park teaches the receiver comprises the pilot signal decoding section 700 decoding the SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-45) of the OFDM signal received according to the sub channel numbers assigned to the pilot/sub signals (column 1, lines 40-55).

To **claim 8**, in FIG. 13 and column 1 lines 40-55, Park teaches the parameter SPC is set according to the broadcasting channel for the SPC, and

further a control circuit 640 for setting the parameter in the equalizing and deinterleaving section 600.

To **claim 14**, in FIG. 1, Park teaches the FEC decoder, and it is well known in the art that the forward error correction decoder provides the error signal when the received signal is not correct.

8. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 6,470,030 B1) in view of Klank et al. (US 6,330,293 B1) as applied to claim 1 above, and further in view of Mitsubori et al. (JP 11-145929-A).

To **claims 5** & **13**, the modified/combined Park et al. 's receiver with Klank et al. 's PRBS generator does not list the transmission control signal included the OFDM frame, however Mitsubori et al. teaches the transmission control signal in their OFDM transmitting system ([0001]). As Park et al.'s receiver with the pilot/reference signal decoding section providing the ability to decode the transmission control signal (another reference signal as the pilot signals) in the OFDM frame taught by Mitsubori et al., at the time of the invention, it would have been obvious to a person of ordinary skill in the art to receive the transmission control signal to have the information regarding the transmission such as the content of a modulation of each subcarrier, an interleave configuration, etc. for the purpose of obtaining the frame synchronization of a signal recovery (as stated in sections [0011] & [0012]).

Allowable Subject Matter

9. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a digital broadcast receiving apparatus as a whole, the combination of elements and features, which includes the received broadcast signal transmitted using a bandwidth of the frequency of the broadcast channel overlapping that of another channel, the received broadcast signal generated by combining sub signals modulated using a PBRS generated based on an initial value, wherein the initial value is changed based on a sub channel number of the other channel as recited in the claims.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
August 24, 2005

YOUNG T. TSE
PRIMARY EXAMINER